

PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Control Systems for Induction Motors

We, UNITED KINGDOM ATOMIC ENERGY AUTHORITY, London; a British Authority, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to induction motors. The invention provides arrangements for effecting starting and speed control of induction motors without the need for slip rings capable of carrying the rotor current, or without the need for a variable frequency power supply.

An induction motor according to the invention has carried on its rotor means for rectifying the rotor current and switch means also carried by the rotor for interrupting and restoring cyclically the rectified current.

An embodiment of the invention will now be described in more detail with reference to the accompanying drawing which is diagrammatic.

In the drawing a three-phase induction motor has a star-connected rotor having insulated windings 1. Each winding 1 is taken to a connector 9 between a pair of rectifiers 2, the three pairs of rectifiers 2 being connected across two feeders 3, 4 terminating at a silicon control rectifier 5 with a parallel surge resistor 6 so that a full wave rectified D.C. appears at the control rectifier from the A.C. generated in the rotor windings. The control rectifier 5 has its control terminal 7 connected with radio-signal receiver 8. The rectifiers for the full-wave rectification, the surge resistor, the control rectifier and the

signal receiver are carried with, and hence rotate with the rotor. A radio signal transmitter 10 is carried on the stator 11 of the motor.

In operation the transmitter sends a signal to the receiver 8 which causes the control rectifier 5 to switch on and off and hence applies to the rotor electrical conditions which alternate from nearly a short circuit (i.e. high power being supplied to the rotor) to nearly an open circuit (i.e. low power being supplied to the rotor). By regulating the relative lengths of the "on—off" periods the mean power to the rotor is modified and hence the speed of the rotor.

If a radio transmitter/receiver system is not desired, the invention could utilise light-current slip rings in order to signal into the control rectifier. Alternatively a rotary pulse generator could be provided having its armature attached to the rotor and electrically connected to supply signals to the control rectifier by means of leads run through an axial hole in the shaft of the motor.

WHAT WE CLAIM IS:—

1. An induction motor carrying on its rotor means for rectifying the rotor current and switch means also carried by the rotor for interrupting and restoring cyclically the rectified current.

2. An induction motor substantially as hereinbefore described with reference to the accompanying drawing.

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1 SHEET

*This drawing is a reproduction of
the Original on a reduced scale*

